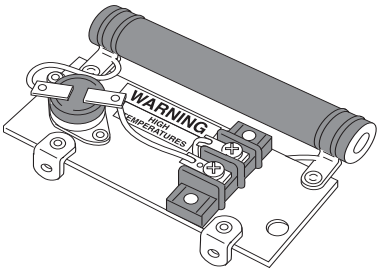
Rain Collector Heater Installation Manual

The Rain Collector Heater may be used to protect the Rain Collector's internal components from freezing and/or to measure the moisture content of snowfall. When the heater is on, it is capable of melting snow at a rate of 1/4" (6 mm) of liquid precipitation per hour. It may not be able to keep up with larger rates of snowfall.



The rain collector heater warms only the inside of the rain collector and the cone itself.

Please note that we have made every attempt to design and manufacture a safe product, but Davis Instruments assumes no liability for any injury or damage caused directly or indirectly by the installation or use of this product.

Note: Although the nominal heater voltage is not hazardous, a short in the wall transformer could cause hazardous voltage to appear on the heater wires. For safety, you should always turn the heater's power unit to the "OFF" position before removing the rain collector's cone. We also recommend that you unplug the wall transformer before removing the rain collector's cone.

This instruction manual is designed to take you step-by-step through the process required to install and use your rain collector heater. Please take the time to read through this manual before beginning the process.

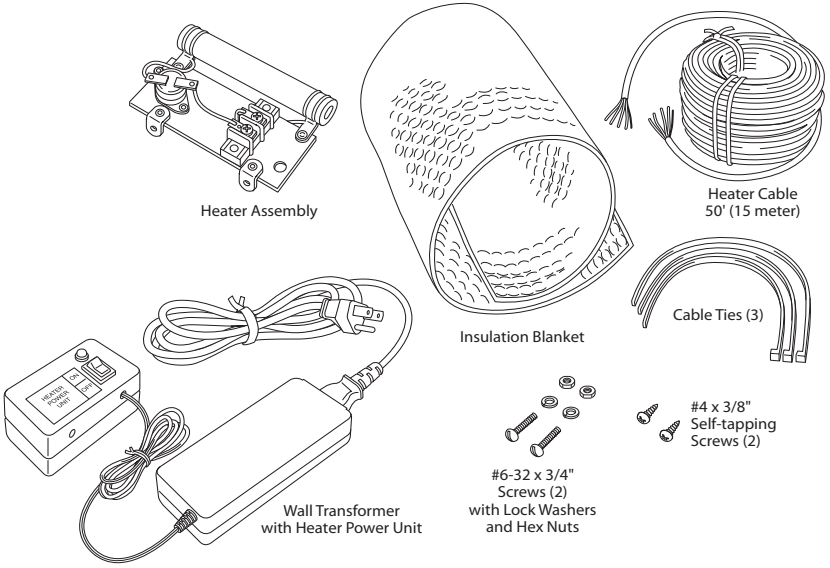
Components

The rain collector heater includes the following components. Please make sure you have all listed components before continuing.

- **Heater Assembly** — Includes heater element, thermostat, and terminal block for power cable.
- **Wall Transformer with Power Unit**
- **Insulation Blanket**
- **50' (15 meter) Heater Cable**

The Installation Hardware Kit includes:

- **Three Cable Ties**
- **Two #6-32 x 3/4” Screws**
- **Two #6-32 Hex Nuts**
- **Two #6-32 Split Lock Washers**
- **Two #4 x 3/8'' Self-tapping Screws**



Components

Tools and Materials Needed for Installation

In addition to the components listed above, you will need some of the following tools and materials. Please be sure you have everything you need before beginning the installation.

- **Medium Phillips-head and Slot-tip Screwdrivers**
- **Drill with 5/32” (4 mm) or 3/16” (4.8 mm), and 9/32” (7.2 mm) or 5/16” (8 mm) Drill Bits**
- **Wire Cutter**
- **Wire Stripper or Knife**
- **Cable Clips or Weather-Resistant Cable Ties**

Choosing Cable for the Rain Collector Heater

The rain collector heater comes with a 50-foot (15 m) length of 22 gauge cable. You may use 22 gauge, two-twisted pair wire for cable lengths up to 120 feet (36 m). If you want to use single pair cable, use the following table to determine the minimum wire size for the desired length of cable run.

Length of Cable Run	Minimum Wire Size
Up to 60 feet (18 m)	22AWG (0.50 mm^2)
60-100 feet (18-30 m)	20AWG (0.75 mm^2)
100-160 feet (30-50 m)	18AWG (1.0 mm^2)
160-250 feet (50-80 m)	16AWG (1.50 mm^2)

If the heater cable is routed with any *signal cable* (i.e. any cable running from a sensor, junction box or SIM), be aware that for cable runs over 50 feet (15 m) the heater cable's voltage may interfere with sensor voltages in the signal. To prevent this interference, do at least one of the following:

- Use twisted pair for the heater cable or the signal cable.
- Use shielded cable for the heater cable or signal cable (shield must be grounded).
- Keep the heater cable and the signal cable separated by several inches over most of the length of the cable run.

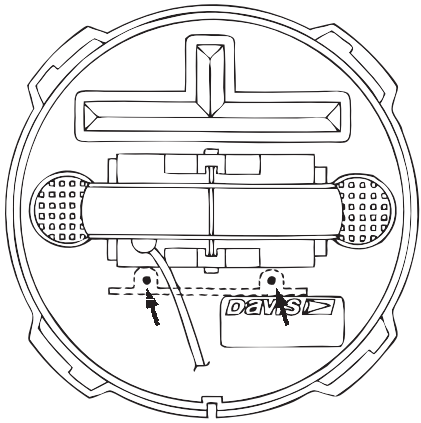
Installing the Rain Collector Heater

The instructions below will take you step-by-step through the procedure required to install the rain collector heater. Make sure the wall transformer is unplugged until you are instructed to plug it in.

Attaching the Heater to the Rain Collector

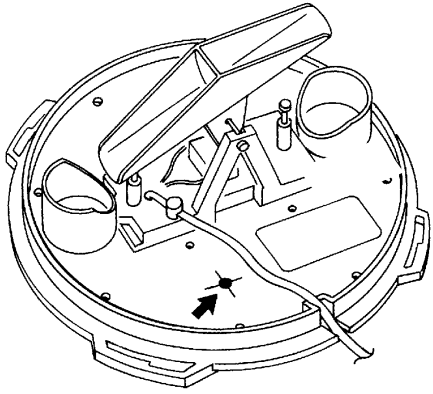
1. Remove the rain collector's cone from the base and, if necessary, remove the mounting screws from the base of the rain collector.
2. If screw holes for the rain collector heater are not already present in the base, position the heater as shown on the next page (with the terminal block facing away from the bucket) and mark the location of the screw holes on the heater assembly.

Earlier versions of the rain collector did not come with built-in holes for the rain collector heater. If your rain collector does not have built-in holes you need to drill them yourself following the instructions below. Otherwise, skip to step 5.



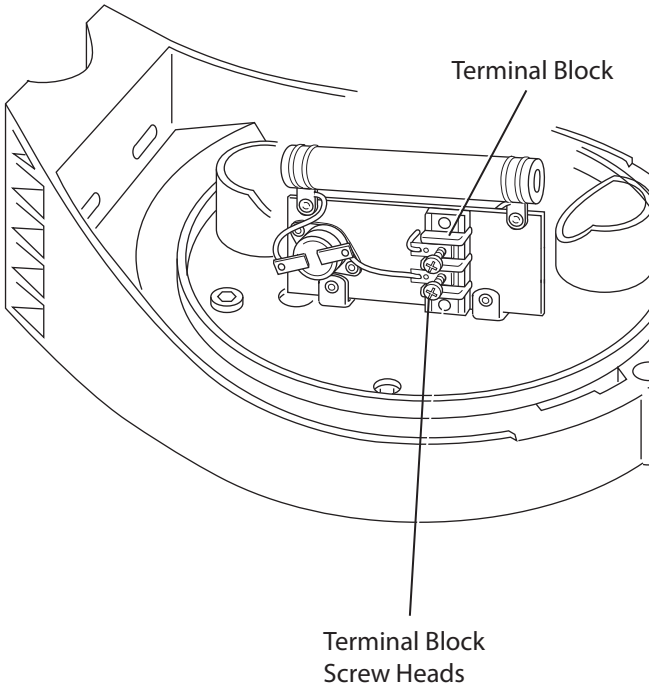
Marking screw holes

3. Using a drill with a 5/32” (4mm) or a 3/16” (4.8 mm) drill bit, drill holes in the marked locations.
4. Using a drill bit with a large enough diameter to allow your power cable to pass through, drill a cable hole in approximately the position shown below. For the provided 50' (15 m) cable, use a 9/32" (7.2 mm) or a 5/16" (8 mm) drill bit. The precise location of the power cable hole is not critical.



Power cable hole

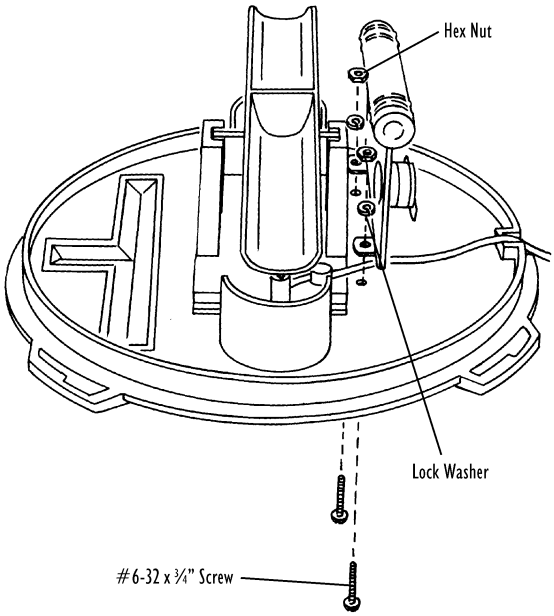
5. Loosen the screw heads on the terminal block.
   You will eventually secure the heater cable wires underneath these screw heads.



Rain collector heater terminal block

6. Secure the heater assembly to the rain collector.

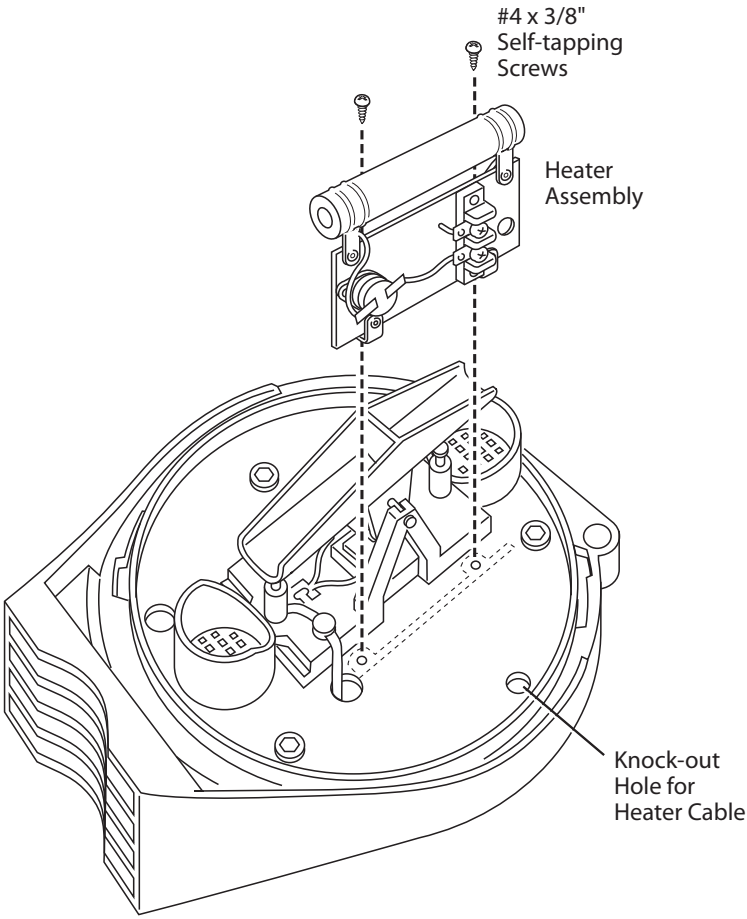
   For **stand-alone rain collectors** (#7852), secure the heater assembly to the rain collector base using the #6-32 x 3/4" (19 mm) screws, a lock washer, and a hex nut, as shown below.



Securing the heater in a stand-alone rain collector

Note: Stand-alone rain collectors are used with all Weather Wizard III, Weather Monitor II stations. Vantage Pro2 rain collectors are included with all Vantage Pro2 Weather stations.

For **Vantage Pro2 rain collectors**, secure the heater assembly to the rain collector base using two #4 x 3/8 self-tapping screws, as shown below.

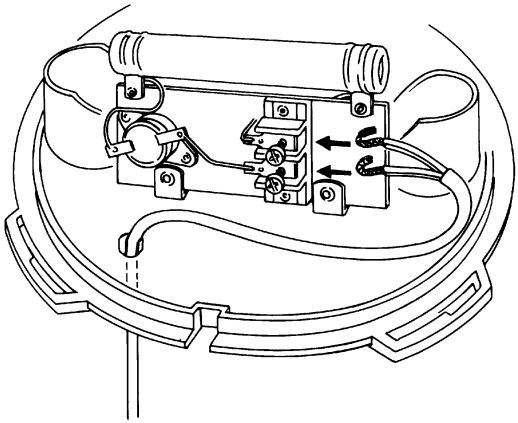


Securing the heater in an Vantage Pro2 rain collector

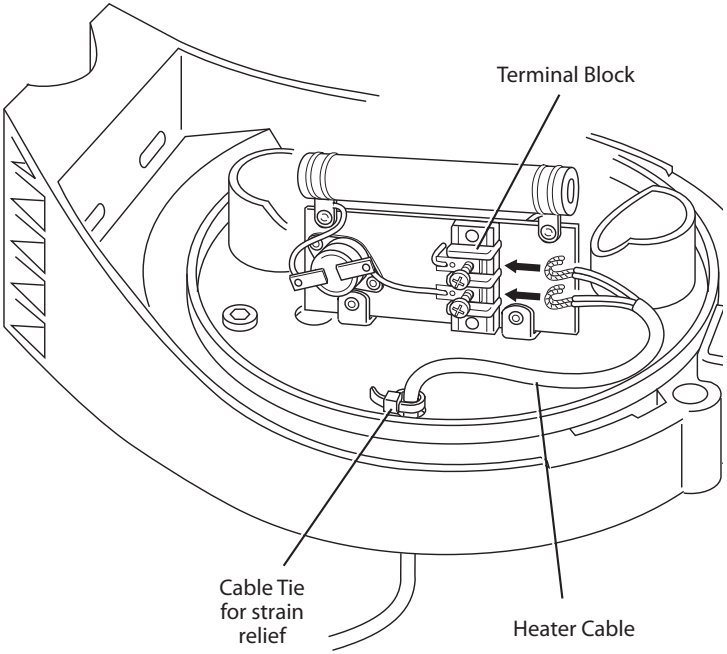
7. Using wire strippers or a knife, strip 3/8” (10 mm) of insulation from the heater cable wires.
8. If you have a Vantage Pro2 rain collector, use a medium size Phillips-head screwdriver to knock out the hole for the heater’s power cable.
9. Pass the heater cable wires up through the cable hole you just drilled (stand-alone rain collector) or knocked out (Vantage Pro2 rain collector).

10. Bend each bare wire into a U-shape and secure each one under a screw head on the terminal block as shown below.

    It does not matter which wire goes to each screw as long as only one wire goes to each screw.

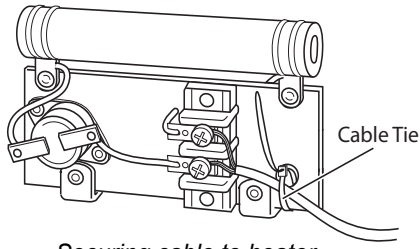


Attaching cables to the terminal block of stand-alone rain collector heater



Attaching cables to terminal block of Vantage Pro2 rain collector heater

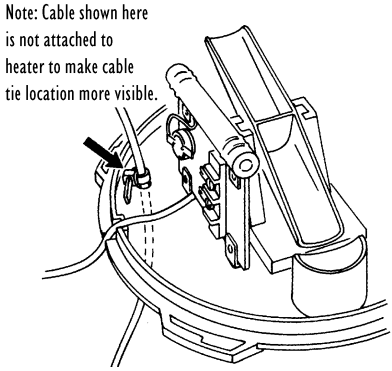
11. Secure the cable to the heater assembly by running a cable tie over the cable and through the hole as shown. You can cut off excess cable tie.



Securing cable to heater

12. To provide strain relief for the cable, place a cable tie around the cable just above the hole through which this cable is running, as shown below.

    You may want to cut off the excess cable tie.



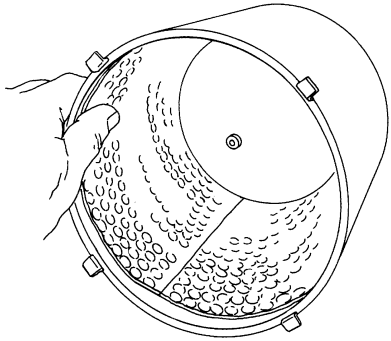
Providing Strain Relief

13. Re-attach (or attach) the rain collector to the mounting surface.

Installing the Insulation Blanket

1. Fit the insulation blanket against the side of the rain collector cone, pushing it as far inside the cone as it will go.

   If fully inserted correctly, the blanket should extend all the way to the top of the cone, leaving a space of approximately 5/16” (8 mm) at the bottom to accommodate the base.
2. Re-attach the rain collector cone (with insulation blanket) to the base.



Inserting the insulation

Powering the Heater

Running the Cables

Run the heater cable from the rain collector to the location at which you plan to plug in the wall transformer/power unit. To prevent fraying or cutting of the cable, secure it so that it does not whip about in the wind. Use cable clips or weather resistant cable ties to secure the cable underneath the eaves of your house/building, or in a location similarly shielded from rain. Make sure the cable is secure by placing clips or ties approximately every 3-5 feet (1-1.6 m). Do not use metal staples or a staple gun. Metal staples, especially when installed with a staple gun, have a tendency to cut the cables.

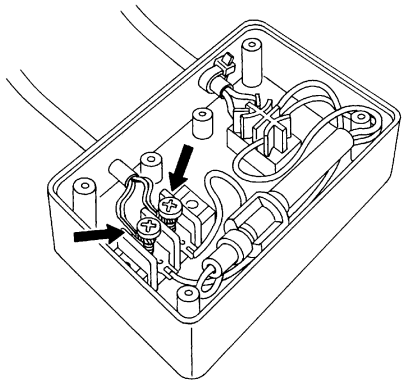
Note: If your cable run extends more than 50 feet (15 m), keep the heater cable and the rain collector cable separated by at least a few inches, as discussed in “Choosing Cable for the Rain Collector Heater” on page 3.

Attaching Cable to Power Unit

1. Remove the base of the power unit by removing the four screws in the base.
2. Loosen the screw heads on the power unit terminal block.

   You will eventually secure the heater cable wires underneath these screw heads.
3. Using wire strippers or a knife, strip 3/8” (10 mm) of insulation from the heater cable wires.
4. Feed the cable through the hole in the power unit..
5. Bend each bare wire into a U-shape and secure under a screw head on the terminal block, as shown below.

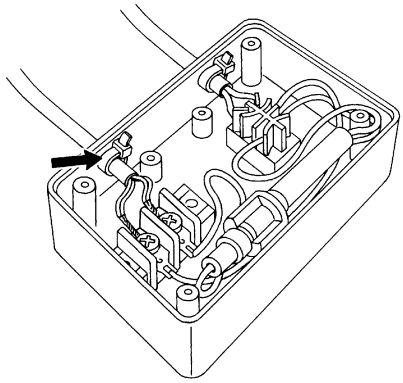
   It does not matter which wire goes to each screw as long as only one wire goes to each screw



Power unit terminal block

6. To provide strain relief for the cable, place a cable tie around the cable just inside the hole through which this cable is running as shown below.

   You may need to cut off the excess cable tie in order to close the power unit.
7. Replace the base of the power unit.
8. You may now plug the wall transformer into an outlet.
9. To insure that the heater is working, you may want to set the power unit to the "ON" setting and then go to the rain collector to insure that the heater element is hot.



Providing strain relief

Note: **DO NOT TOUCH THE HEATER ELEMENT OR ANY METALLIC PORTION OF THE HEATER.** You should be able to feel the heat at a short distance from the heater element.

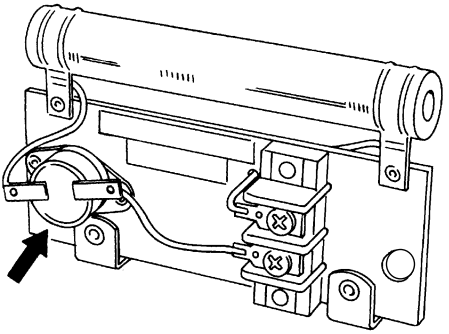
Using the Rain Collector Heater

You may switch the rain collector heater on and off from the power unit.

- **OFF** — When the rain collector heater is off, the indicator light on the power unit is also off.
- **ON** — When the rain collector heater is on, it is capable of melting snow at a rate of 1/4" (6 mm) of liquid precipitation per hour. It may not be able to keep up with larger rates of snowfall. When the rain collector heater is set to "ON," the indicator light on the power unit is also on.

The heater assembly includes a thermostat switch. If the temperature at the thermostat reaches 110°F (43°C) the thermostat will interrupt power to the heater element.

When the temperature at the thermostat drops to about 85°F (30°C) power flow to the heater element will be resumed.



Location of thermostat

You can turn the heater on when you expect the temperature to drop below freezing, and turn it off again when you are no longer worried about freezing conditions.

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Davis Instruments Part Number: 7395.096
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Rev. F Manual (8/20/10)

This product complies with the essential protection requirements of the EC EMC Directive 2004/108/EC.
Davis Instruments Quality Management System is ISO 9001 certified.
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